

AMENDMENTS TO THE DRAWINGS

In accordance with U.S. Patent and Trademark Office practice, proposed drawing changes as REPLACEMENT SHEETS are attached, wherein Applicant proposes to amend the drawings in the above-identified application as follows:

Please amend Figure 2 by adding -- θ --, -- 120 --, and -- 130 --.

Please amend Figure 3 by adding -- O --, -- X1 --, and -- X2 --, and by adding arrowed lines extending from crossing lines A-A' and B'-B'.

No new matter has been added. Approval is earnestly requested.

REMARKS

This is in response to the Final Office Action mailed on November 13, 2007. Please note that this amendment is being filed within two-months from the mailing of the Final Office Action.

Claims 14-25 are currently pending in this application, with claims 14 and 19 being independent.

No new matter has been added.

Reexamination in light of the following remarks is respectfully requested.

Entry of amendment

This amendment *prima facie* places the case in condition for allowance. Alternatively, it places this case in better condition for appeal.

Accordingly, entry of this amendment is respectfully requested.

Drawing amendments

Regarding the amendment of Figure 2 by adding -- 0 --, -- 120 --, and -- 130 --, U.S. Application Publication No. 2006/0006438, the publication document for the present application, provides the following:

[0034] In FIGS. 1 and 2, a photodiode 110 for each pixel is provided on the top layer of a silicon substrate 100, and a transfer gate portion 120 and an FD portion 130 are provided adjacent to the photodiode 110. Other components including a transistor

140 are further provided therein. An inter-element separating layer 150 containing, for example, LOCOS is provided on the top layer of the silicon substrate 100.

[0043] On the other hand, since the main light beam a launches on pixels in the screen peripheral part shown in FIG. 2 at an angle of incidence θ , the microlens 260, color filter 250, wires 220, 230 and 240, photodiode 110 and so on are disposed along the direction of incidence in accordance with the angle of incidence θ in a positional relationship so that the arrangement of these elements can be optimized.

Regarding the amendment of Figure 3 by adding -- O --, -- X1 --, and -- X2 --, and by adding arrowed lines extending from crossing lines A-A' and B'-B', U.S. Application Publication No. 2006/0006438, the publication document for the present application, provides the following:

[0049] Here, the tilting angles of the photoelectric converting portions may be even over the imaging area or may be increased as the distances from the center part of the imaging area to pixels increase.

Entry of these amendments is respectfully requested.

Prematureness

Applicant, seeking review of the prematureness of the final rejection within the Final Office Action, respectfully requests reconsideration of the finality of the Final Office Action for the reasons set forth hereinbelow. See M.P.E.P. §706.07(c).

Rejections under 35 U.S.C. §102 and 35 U.S.C. §103

Paragraph 5 of the Final Office Action indicates a rejection of claims 14-16 and 19-25 under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent No. 6,211,509 to Inoue et al. (Inoue).

Paragraph 7 of the Final Office Action indicates a rejection of claims 17-18 under 35 U.S.C. §103 as allegedly being unpatentable over Inoue in view of U.S. Patent Application No. 2005/0035376 to Yamada.

These rejections are traversed at least for the following reasons.

Claims 15-18 are dependent upon claim 14. Claim 14 is drawn to a method of manufacturing a solid-state image pickup device, characterized by comprising:

a step of forming a photoelectric converting portion and collective lens in each pixel of an imaging area,

wherein the collective lens is placed at a position shifted more toward a center of the imaging area than the position of the photoelectric converting portion in a pixel based on a position of each pixel; and

an amount of the shift of the collective lens is defined based on the height from a surface of the photoelectric converting portion of the collective lens and the thickness in the direction of depth of the substrate of the photoelectric converting portion such that an amount of light incident within the photoelectric converting portion can increase.

Claims 20-25 are dependent upon claim 19. Claim 19 is drawn to a solid-state image pickup device comprising:

pixels arranged in an imaging area, each of the pixels having a collective lens and a photoelectric converting portion,

wherein the collective lens is placed at a position shifted more toward a center of the imaging area than the position of the photoelectric converting portion in a pixel based on a position of each pixel.

The following description is provided for illustrative purposes and is not intended to limit the scope of the invention.

Provided hereinbelow are Figures 1-2 of the specification as originally filed.

FIG. 1

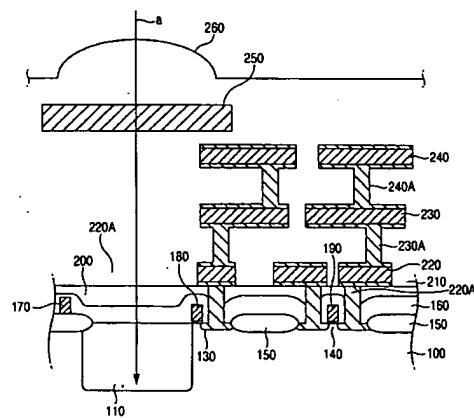


FIG. 2

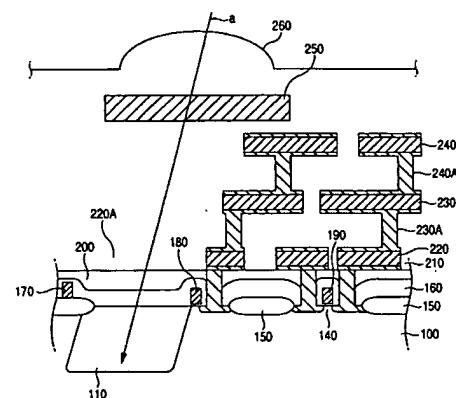
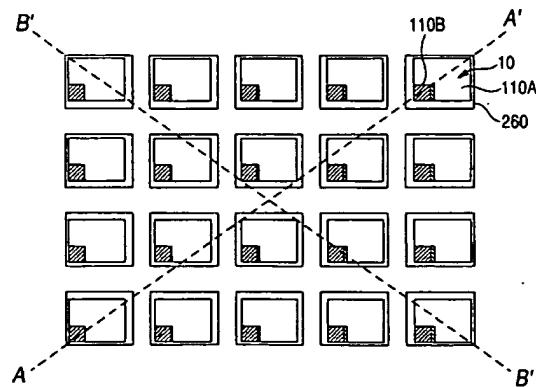


FIG. 3



Inoue - Inoue arguably teaches the presence of a solid-state image sensor. Provided hereinbelow is Figure 1 of Inoue.

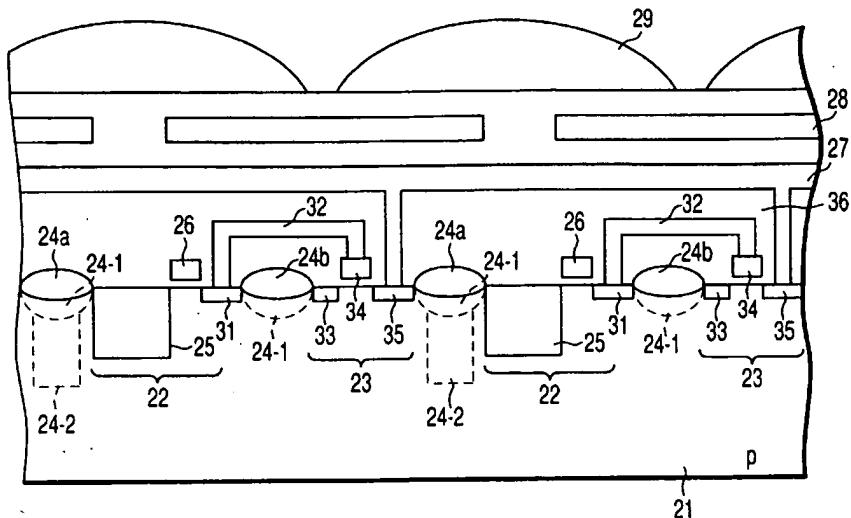


FIG. 1A

The Final Office Action appears to associate element 29 of Inoue as the *collective lens* 29 and appears to associate element 25 of Inoue as the *photoelectric converting portion* 25 (Office Action at page 3).

However, comparing the adjacent pixel units depicted within Figure 1A of Inoue, Figure 1A of Inoue fails to disclose, teach, or suggest that the collective lens 29 is placed at a position shifted more toward a center of the imaging area than the position of the photoelectric converting portion 25 in a pixel based on a position of each pixel.

Specifically, the Office Action fails to cite any objective teaching within Inoue for showing a positioning of an alleged collective lens 29 more toward a center of the imaging area than the positioning of an alleged the photoelectric converting portion 25.

- *Thus, Inoue fails to disclose, teach, or suggest that the collective lens is placed at a position shifted more toward a center of the imaging area than the position of the photoelectric converting portion in a pixel based on a position of each pixel.*

The Office Action contends that applicant's arguments that drawings are not to scale has no merit because applicant's own drawings are not to scale to in the absence of quantifiable measurements (Office Action at page 7).

In response, U.S. Application Publication No. 2006/0006438, the publication document for the present application, provides the following:

[0043] On the other hand, since the main light beam a launches on pixels in the screen peripheral part shown in FIG. 2 at an angle of incidence θ , the microlens 260, color filter 250, wires 220, 230 and 240, photodiode 110 and so on are disposed along the direction of incidence in accordance with the angle of incidence θ in a positional relationship so that the arrangement of these elements can be optimized.

[0047] Furthermore, as shown in FIG. 2, the photoelectric converting portion (n-type region) of the photodiode 110 tilts from the center part of the imaging area (imaging pixel portion) to the outside in a pixel in the screen peripheral part in accordance with the angle of incidence θ .

[0053] Accordingly, in this embodiment, the microlens 260 and light-shield film opening part 210A in each of pixels on the point A side are placed at positions shifted toward the center of the imaging area more largely than those of pixels on the A', B and B' sides with respect to the conventional example shown in FIG. 7 so that an amount of a positional correction can be increased, and an amount of loss in received light due to the readout gate portion 110B of each of the pixels can be even in pixels in each of the corners.

Accordingly, a written description of the quantitative values shown within the drawing figures of the present application can be readily found within the specification of the present application.

Yet, no comparable teaching can be found within Inoue.

Yamada - Yamada arguably teaches the presence of a solid-state image sensor. Yamada arguably teaches the presence of a plurality of photoelectric conversion sections 309 (Yamada at paragraph [0061]).

Provided hereinbelow is Figure 1 of Yamada.

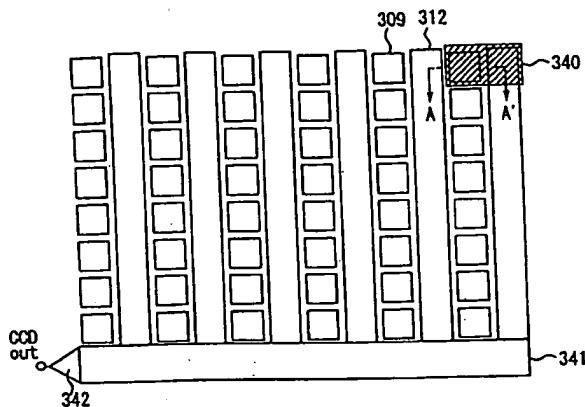


FIG. 1

The Final Office Action fails to identify any written description in the specification of Yamada for the teaching that an alleged collective lens of Yamada is placed at a position shifted more toward the center of the imaging area from a part on the symmetrical substantial center as a distance from the center of the imaging area to a pixel thereof increases.

Yamada - The Final Office Action fails to identify any written description in the specification of Inoue for the teaching that a collective lens of Yamada is placed at a position shifted more toward the center of the imaging area as a distance from the center of the imaging area to a pixel thereof increases.

- Thus, Yamada fails to disclose, teach, or suggest that the collective lens is placed at a position shifted more toward a center of the imaging area than the position of the photoelectric converting portion in a pixel based on a position of each pixel.

Withdrawal of these rejections and allowance of the claims is respectfully requested.

Conclusion

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance.

Therefore, this response is believed to be a complete response to the Office Action.

Applicants reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers.

There is no concession as to the veracity of Official Notice, if taken in any Office Action. An affidavit or document should be provided in support of any Official Notice taken. 37 CFR 1.104(d)(2), MPEP § 2144.03. See also, *Ex parte Natale*, 11 USPQ2d 1222, 1227-1228 (Bd. Pat. App. & Int. 1989)(failure to provide any objective evidence to support the challenged use of Official Notice constitutes clear and reversible error).

Accordingly, favorable reexamination and reconsideration of the application in light of the remarks is courteously solicited.

Extensions of time

Please treat any concurrent or future reply, requiring a petition for an extension of time under 37 C.F.R. §1.136, as incorporating a petition for extension of time for the appropriate length of time.

Fees

The Commissioner is hereby authorized to charge all required fees, fees under 37 C.F.R. §1.17, or all required extension of time fees. If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

Dated: January 10, 2008

Respectfully submitted,

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